

### THREE NEW SPECIES OF RHAPHIUM (DIPTERA)

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*Buffalo, New York*

#### *Rhaphium obtusum* Van Duzee, new species

Male: Length, 5 mm. Face wide, its sides parallel, viewed obliquely appearing gray or whitish, seen from in front more slate-colored; front opaque with grayish brown pollen; palpi black with numerous black hairs; antennæ black, first joint with bristles above and below; third joint about twice as long as width of base, somewhat triangular; arista apical, scarcely as long as the antenna; beard white, not abundant.

Dorsum of thorax blue, posterior part and scutellum more green, the whole covered with thick gray pollen, the bristles inserted in minute black dots; scutellum with two pair of long bristles; dorsum of abdomen shining green, covered with stiff black hairs and white pollen which is more conspicuous at base of the segments; posterior part of segments more blackish on the middle. Hypopygium black; outer appendages small, black, somewhat rounded at tip, covered with pale hairs; inner appendages large, lamella-like, extending far beyond the outer lamellæ and appearing like an extension of the hypopygium when viewed from the side; central filament stout, black not reaching the tip of the inner appendages.

Coxæ and femora black, tips of fore and middle femora yellow, trochanters black; fore coxæ with black, bristly hairs on anterior surface; middle coxæ without a distinct spur, but the long stiff hairs on the front surface extend down beyond their tips, forming a small obscure spur; all femora with black bristles on the whole of their lower surface, those on middle ones longest; all tibiæ yellow, posterior very narrowly black at base and quite broadly so at tip; all tibiæ with short hair, the bristles on upper surface large, middle pair with several very minute ones below; fore and middle tarsi black from the tip of the first joint, the posterior wholly black; all tarsi plain; joints of fore tarsi as 48-11-10-7-10; of middle ones as 56-19-14-9-9; joints of posterior ones as 40-29-20-12-12. Calypters white with a black tip and yellow cilia; knobs of halteres white.

Wings a little grayish; first vein reaching halfway to tip of second; third vein only a little bent back at tip; last section of fourth vein bent at basal third, parallel with third at tip, ending in the apex of the wing; cross-vein 28, last section of fifth vein 50 fiftieths of a millimeter long.

*Type*, male, No. 2557, Mus. Calif. Acad. Sci., taken by E. P. Van Duzee, June 27, 1927, at **Reno, Nevada**; one *paratype* was taken at the same time and place.

This would run to *terminalis* in Mr. Curran's table of species

(Trans. Royal Canadian Institute, Toronto, Vol. XV, p. 253, 1926). It differs from that species in having very short outer hypopygial appendages, while in that species the outer appendages are very long and slender.

***Rhaphium calcaratum* Van Duzee, new species**

Male: Length, 2.5 mm. Face rather wide, narrowest below, brown when seen from in front, white when viewed obliquely; antennæ black, third joint somewhat conical in outline, one and a half times as long as wide; arista twice as long as the third joint; palpi and proboscis black; front and occiput blackish; lateral and inferior orbital cilia and the beard white.

Thorax, scutellum and abdomen dark green, the latter with slight coppery reflections and short black hair on dorsum; hair on the sides long and white; the thin brownish pollen on the dorsum of the thorax leaving shining lines along the rows of bristles. Hypopygium black, nearly round; outer appendages rather long filaments that are a little bent at tip, fringed with hairs and about as long as the width of the hypopygium; inner appendages a pair of stouter filaments; straighter and stouter than the outer ones with only a few very short hairs, placed on each side of the tip of the hypopygium.

All coxæ, fore and middle femora, apical half of posterior femora and the whole of posterior tibiæ and tarsi black; basal half of hind femora and fore and middle tibiæ yellow, fore and middle tarsi black from the extreme tip of first joint; hairs on fore coxæ white; middle coxæ without a spur; first joint of fore tarsi swollen below on basal half; first joint of middle tarsi a little enlarged at tip; joints of fore tarsi as 15-8-5-5-6; of middle ones as 29-11-10-7-6; joints of posterior tarsi as 25-23-15-10-9. Calypters and halteres yellow, cilia of the former white.

Wings grayish; third and fourth veins parallel toward their tips, fourth ending in the apex of the wing; last section of fifth vein 36, cross-vein 10 fiftieths of a millimeter long.

Described from one male in the author's collection, taken at Ithaca, New York.

***Rhaphium fuscicosta* Van Duzee, new species**

Male: Length, 5 mm. Face narrow, silvery white; front green, dulled with white pollen; palpi black with white pollen and long, flattened, silvery white hairs on apical part; proboscis black; antennæ black, width of third joint is as 11, length as 40, length of arista as 43; upper orbits with a few short black cilia, no cilia on lateral and inferior orbits; beard very short, white, a few white bristles below the head.

Thorax and scutellum green with bronze reflections, slightly dulled with white pollen. Abdomen blue-green, more blue posteriorly, base

of segments blackish; hairs on dorsum of abdomen black, on the sides long, stiff and yellowish white. Hypopygium black, outer appendages long brown filaments fringed with long hairs; inner appendages very large thin lamellæ, a little longer than the outer filaments ( $\frac{1}{2}$  mm. long), about twice as long as wide, broadly rounded at apex, whitish, blackened at base.

Coxæ black, anterior pair with green reflections; fore and middle coxæ with long, dense, silvery white hair, the latter with a large black thorn at tip; fore femora, except tip, a broad ring on apical half of middle femora, most of apical half of posterior femora and the trochanters black; remainder of middle and hind femora, the whole of fore and middle tibiæ and basal three-fifths of posterior tibiæ yellow; apical two-fifths of hind tibiæ and all tarsi black, base of fore and middle tarsi slightly yellowish; fore and middle femora with long pale hairs below; posterior femora with a few long pale hairs at base above, none below; hind tibiæ thickened on apical part; middle tarsi with the second, third and fourth joints slightly widened; joints of fore tarsi as 34-10-7-6-8; of middle ones as 55-23-17-10-9; those of posterior pair as 51-20-16-10-10. Calypters yellow with black tips and white cilia; halteres pale yellow.

Wings grayish, costal margin blackish from just before the tip of first vein to tip of third vein and from the costa to third vein; apical part of wing beyond the cross-vein and back to fourth vein tinged with brown; third vein bent back at tip; last section of fourth vein bent at its middle, parallel with third at tip, reaching the wing margin just before apex of wing; last section of fifth vein 56, cross-vein 28 fiftieths of a millimeter long.

Described from one male in the author's collection, taken by him, June 16, 1924, at Little Valley, New York.

This is something like *banksi* Van Duzee, but in that species the large lamellæ are the outer appendages, in this they are the inner ones. It is still more like *insolitum* Curran, but the outer appendages in that form are much broader at base, being triangular, not filaments as in this; the beard in that species is very abundant and long, in this it is short and not very abundant.

*Obtusum* new species also comes in this group of four species having large hypopygial lamellæ; *fuscicosta* and *insolitum* have the basal half of hind femora yellow, apical half black; *banksi* and *obtusum* have all femora wholly black, except at tip; in *banksi* the large lamellæ are whitish tinged with brown and black at extreme tip, in *obtusum* the lamellæ are black at base, slightly testaceous or yellowish at tip, they are also of a different form.